



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

**COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)F FISSILE
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0208/B(U)F-85, REVISION 7**

400 Seventh Street, S.W.
Washington, D.C. 20590

REVALIDATION OF JAPANESE COMPETENT AUTHORITY CERTIFICATE J/61/B(U)F-85

This certifies that the radioactive materials package design described below is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency¹ and United States of America².

1. Package Identification - Model No. JRC-80Y-20T.
2. Package Description and Authorized Contents - as described in Japanese Certificate of Competent Authority J/61/B(U)F-85 dated June 2, 2000 (attached).
3. Criticality -
 - a. Criticality Transport Index - 0.0
 - b. Allowable Number of Packages per Conveyance - Unlimited
 - c. The criticality analysis considered both the presence and absence of water in all void spaces.
4. General Conditions -
 - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
 - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology (DHM-23), Research and Special Programs Administration, U.S. Department of Transportation, Washington, D.C. 20590-0001.
 - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

¹ "Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials, 1985 Revised Edition, as amended," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

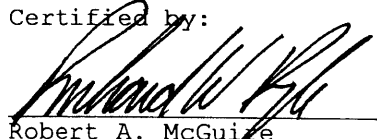
² Title 49, Code of Federal Regulations, Parts 100 - 199, United States of America.

CERTIFICATE USA/0208/B(U)F-85, REVISION 7

- d. Records of Quality Assurance activities required by Paragraph 209 of the IAEA regulations¹ shall be maintained and made available to authorized officials for at least three years after the last shipment authorized by this certificate. Consignors exporting shipments from the United States shall satisfy the requirements of Subpart H of 10 CFR 71.
5. Special Conditions -
 - a. In accordance with the attached Japanese Certificate of Competent Authority, the package is not to be transported by air.
 - b. Prior to each shipment, the containment system shall be leak tested to show a leak rate less than 1×10^{-3} atm-cm³ per second.
 - c. Within 12 months from date of shipment, the containment system shall demonstrate a leak rate of less than 1×10^{-4} atm-cm³ per second.
6. Marking and Labeling - The package shall bear the marking USA/0208/B(U)F-85 in addition to other required markings and labeling.
7. Expiration Date - This certificate expires on March 23, 2003.

This certificate is issued in accordance with paragraphs 706 and 712 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the September 28, 2000 petition by Edlow International Company, Washington, DC and in consideration of other information on file in this Office.

Certified by:


Robert A. McGuire
Associate Administrator for Hazardous
Materials Safety

OCT 25 2000
(DATE)

Revision 7 - issued to endorse Japanese Certificate of Competent Authority No. J/61/B(U)F-85 dated June 2, 2000 with additional leak test requirements.

IDENTIFICATION MARK

J/61/B(U)F-85

COMPETENT AUTHORITY

OF

JAPAN

CERTIFICATE OF APPROVAL OF PACKAGE DESIGN
FOR THE TRANSPORT OF RADIOACTIVE MATERIALS

ISSUED BY SCIENCE AND TECHNOLOGY AGENCY

2-2-1 KASUMIGASEKI, CHIYODA-KU, TOKYO, JAPAN



Science and Technology Agency
Prime Minister's Office
2-2-1 Kasumigaseki Chiyoda-ku Tokyo 100, JAPAN

Reference J/61/B(U)F-85

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CERTIFICATE OF APPROVAL OF PACKAGE DESIGN
FOR THE TRANSPORT OF RADIOACTIVE MATERIALS

This is to certify, in response to the application by Japan Atomic Energy Research Institute on March 13, 2000, that the Design of Package described herein satisfies the design requirements of Type B(U)F specified in Regulations for the Safe Transport of Radioactive Materials (International Atomic Energy Agency, Safety Series No.6, 1985 Edition).

COMPETENT AUTHORITY

IDENTIFICATION MARK : J/61/B(U)F-85

June 2, 2000

Date

Tsutomu Imamura

Tsutomu Imamura

Director General,
Nuclear Safety Bureau,
Science and Technology Agency,
Competent Authority of Japan for
Package Designs of Radioactive Materials

1. NAME OF PACKAGE

: JRC-80Y-20T

(IDENTIFICATION MARK : J/61/B(U)F-85)

2. SPECIFICATION OF CONTENT

(1) Description of Contents

1) Materials of Nuclear Fuel : See Tables 1 & 2

(2) Qualitative Restrictions on Contents

1) Gross Weight of Uranium : See Tables 1 & 2

2) Total Activity of Contents : See Tables 1 & 2

3) Uranium-235 Enrichment : See Tables 1 & 2

4) Burnup : See Tables 1 & 2

5) Total Heat Generation Rate : See Tables 1 & 2

6) Cooling Time : See Tables 1 & 2

3. SPECIFICATION OF PACKAGE

(1) Total Weight of Package : 23 ton or less

(2) Outside Dimension of Packaging

1) Outer Diameter : Approx. 1.9 m

2) Height : Approx. 2.1 m

(3) Materials of Packaging

1) Cask Body and Lid : Stainless Steel

2) Fuel Basket : Stainless Steel, Boral Plate

3) Shock Absorber and Fin : Stainless Steel

(4) Package Illustration : See Attached Fig.1

4. RESTRICTIONS ON TRANSPORT

(1) Array : No Restriction

(2) Restriction Number : No Restriction

(3) Transport Index for Criticality Control : 0

5. SPECIAL FEATURES ASSUMED IN THE CRITICALITY ASSESSMENT

Any special features are not considered in the criticality assessment, because the subcriticality calculation is evaluated upon the assumption that internal void spaces of the packaging are filled with water.

6. DETERMINATION IN THE CRITICALITY ASSESSMENT

Any determination is not considered in the criticality assessment, because the subcriticality calculation is evaluated upon the condition of the fresh nuclear fuels.

7. RESTRICTIONS ON THE MODES OF TRANSPORT

It is not confirmed that the design of package satisfies the additional requirements for packages transported by air.

8. INSTRUCTIONS ON USE AND MAINTENANCE OF PACKAGING

The packaging shall be handled with care according to the operating manual. In order to ensure the integrity of packaging, the following inspections shall be performed at least once a year (in case frequency of transport exceeds 10 times a year, the inspections shall be done at least once per every 10 times.).

- (1) Visual Inspection
- (2) Leakage Rate Measurement Inspection
- (3) Lifting Inspection
- (4) Subcriticality Inspection
- (5) Heat Transfer Inspection
- (6) Shielding Inspection

9. ACTIONS PRIOR TO SHIPMENT

Each package shall be inspected for the following items prior to each shipment.

- (1) Visual Inspection
- (2) Lifting Inspection
- (3) Weight Measurement Inspection
- (4) Surface Contamination Measurement Inspection
- (5) Radiation Dose Rate Measurement Inspection
- (6) Subcriticality Inspection
- (7) Contents Inspection
- (8) Surface Temperature Measurement Inspection
- (9) Leakage Rate Measurement Inspection
- (10) Package internal Pressure Measurement Inspection

10. PRECAUTIONS FOR LOADING OF PACKAGE FOR TRANSPORT

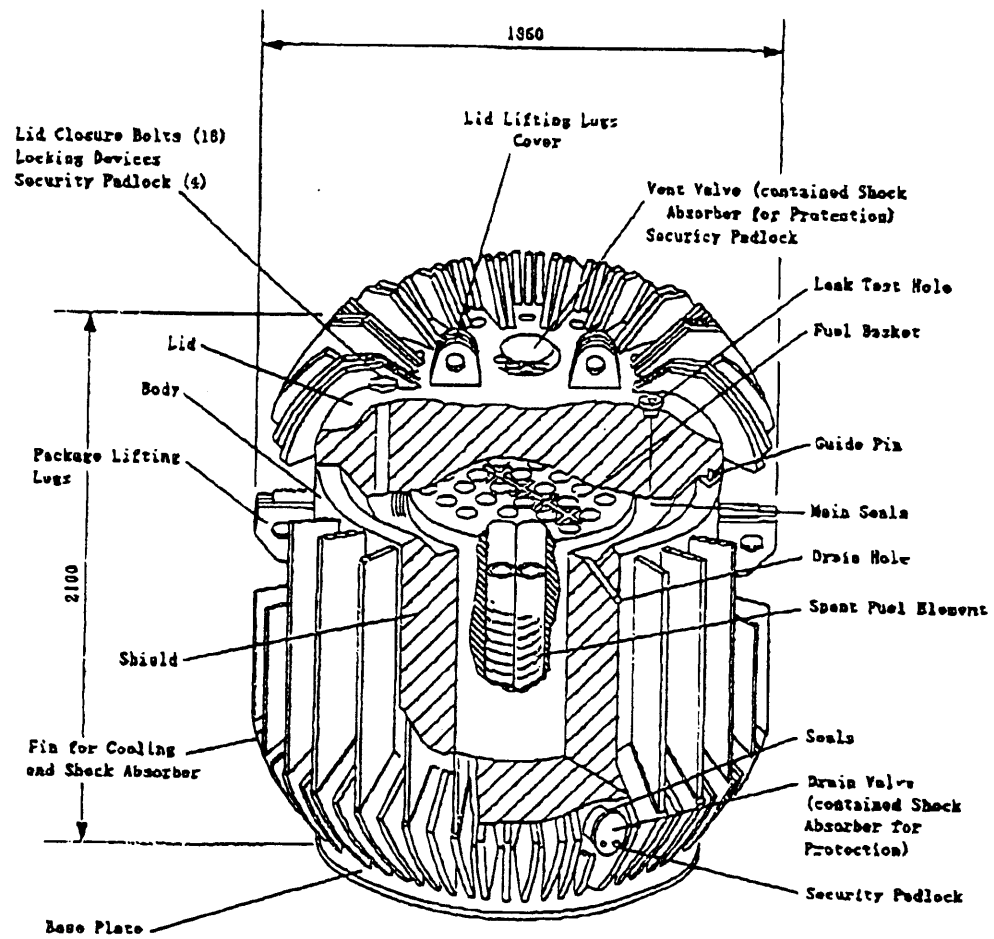
Loading of the package shall be performed such that the package will not move, roll down or fall down during transport.

11. EXPIRY DATE

Mar. 23 , 2003

12. NOTE

This certificate dose not relieve the consignor from compliance with any requirements of the government of any country through or into which the package will be transported.



all dimensions in mm

Fig.1 Illustration of JRC-80Y-20T Package

Table 1 Specification of Package

Fuel Basket		Box Type									
Type	Reactor		JRR-2		JRR-3		JRR-4		JMTR		
	Spent Fuel Element		Box Type ¹⁾	High Burnup Box Type ²⁾	Standard Type ³⁾	High Enrichment Type ⁴⁾	Low Enrichment Type ⁵⁾	Standard Type			
Total Initial Weight (kgU/Package)			8.92 or less		61.20 or less	7.52 or less	46.60 or less	12.72 or less			
Total Activity (Bq/Package)			2.1×10 ¹⁴ or less	2.0×10 ¹⁴ or less	2.1×10 ¹⁴ or less	1.1×10 ¹⁴ or less	1.2×10 ¹⁴ or less	2.0×10 ¹⁴ or less			
Physical State	Fuel Mat		Uranium Aluminum Alloy		Uranium Aluminide Dispersion Type Alloy	Uranium Aluminum Alloy	Uranium Aluminide Dispersion Type Alloy	Uranium Aluminum Alloy			
					Uranium Silicide Dispersion Type Alloy		Uranium Silicide Dispersion Type Alloy				
Clad		Aluminum Alloy									
Side Plate, etc.		Aluminum Alloy									
Initial Enrichment (%)			93.3 or less		20 or less	93.3 or less	20 or less	93.3 or less			
Burnup (%)			40 or less	50 or less	20 or less		20 or less				
Total Heat Generation Rate (W/Package)			2.27×10 ³ or less	2.22×10 ³ or less	2.25×10 ³ or less	1.17×10 ³ or less	1.57×10 ³ or less	1.61×10 ³ or less			
Cooling Time (Day)			90 or more	130 or more	300 or more	90 or more		305 or more			
Number of Spent Fuel Elements (Element/Package)		40* or less									

* The number includes the mixture of the Spent Fuel Elements.

* The number includes the mixture of the Spent Fuel Elements 1) through 5).

Table 2 Specification of Package

Fuel Basket		Cylinder Type			Polloxer Type		IRU Type
Type	Reactor	JRR-2			JRR-3	JMYR	JRR-3
	Spent Fuel Element	Cylinder Type"	High Burnup Cylinder Type"	Medium Enrichment Type"	Polloxer Type	Follower Type	Metallic Natural Uranium Type
Total Initial Weight (kg/Package)		6.69 or less		15.45 or less	38.80 or less	8.88 or less	1.36×10 ³ or less
Total Activity (Bq/Package)		1.9×10 ¹⁴ or less	2.0×10 ¹⁴ or less	2.0×10 ¹⁴ or less	1.3×10 ¹⁴ or less	1.3×10 ¹⁴ or less	9.2×10 ¹⁴ or less
Physical State	Fuel Heat	Uranium Aluminum Alloy		Uranium Aluminide Dispersion Type Alloy	Uranium Aluminum Dispersion		Metallic Natural Uranium
					Uranium Silicide Dispersion Type Alloy		
	Clad	Aluminum Alloy					
	Side Plate, etc.	Aluminum Alloy					
Initial Enrichment (%)		93.3 or less		46 or less	20 or less	93.3 or less	0.72
Burnup (%)		40 or less	50 or less				23 or less
Total Heat Generation Rate (W/Package)		2.00×10 ³ or less	2.20×10 ³ or less	2.22×10 ³ or less	1.43×10 ³ or less	1.35×10 ³ or less	7.24×10 ³ or less
Cooling Time (Day)		90 or more	110 or more	120 or more	300 or more	200 or more	2,190 or more
Number of Spent Fuel Elements (Element/Package)		30" or less			40 or less		160 or less

** The number includes the mixture of the Spent Fuel Elements 1) through 3).